# PERSONALITY CHANGE DURING MILITARY BASIC TRAINING

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# Personality Change During Military Basic Training

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# **Executive Summary**

# **Problem**

Training personnel and parents who observe young men before and after military basic training typically perceive positive changes in recruits. The one published attempt to document those changes in the general recruit population produced evidence of increased reporting of mild symptoms of psychopathology. The conflict between subjective impressions and the empirical evidence suggests further information is needed to carefully define the effects of basic training on the personality makeup of military recruits.

# Objective |

The present study employed the five-factor model of personality to characterize the overall pattern of personality change in male recruits during U.S. Navy basic training.

# Approach

The NEO Five-Factor Inventory (NEO-FFI, Costa & McCrae, 1992) was administered to two samples of male U.S. Navy recruits to measure Neuroticism (N), Extraversion (E), Openness to Experience (E), Agreeableness (A), and Conscientiousness (C). In one sample, each recruit completed the NEO-FFI only once, either at the end of the first week of basic training or the end of the seventh week of basic training. In the second sample, each recruit completed the questionnaire after the first week of training, then again after the seventh week of training. Differences in personality were identified by t-tests between groups in the first design and paired t-test in the within-group design. The method of adding probabilities was used to provide pooled significance estimates for the two samples.

#### Results

N decreased approximately one-fourth of a standard deviation in both samples (Effect Size = -.24 and -.29). C increased approximately one-third of a standard deviation in both samples (Effect Size = .36 in both). These changes were highly significant (pooled p < .001). Changes in E, O, and A were small and statistically nonsignificant.

# Conclusions

The present study confirmed the positive impressions of basic training held by training personnel and parents. Recruits leave basic training better prepared to be effective service members than they were on entry into training. Recent meta-analyses of personality and job performance link low scores on N and high scores on C to better performance, particularly in the area of behaviors such as absenteeism and substance abuse. The observed decreases in N and increases in C therefore imply better performance. Further study to define the elements of basic training that foster personality change could lead to training modifications that would further enhance the positive effects of basic training.

# Introduction

Military basic training is a major transition period for many recruits. The transition from civilian life to the military service presents military recruits with a wide range of adaptive challenges (Janis, 1945; Maskin & Altman, 1943). The challenges are part of a training process designed to induce and facilitate changes in behavior (Bourne, 1967; Zurcher, 1968).

Basic training is encountered at a time when the typical recruit is in an important personality development phase. Most recruits enter the service between 17 and 20 years of age. During the next 10 years, the average young person undergoes substantial personality development as part of normal psychosocial development processes. When the normal developmental process combines with an environment designed to induce and direct behavioral and attitudinal changes, the environment may have an exceptional influence on personality development. Given that more than 100,000 young people go through military basic training every year (even with recent downsizing trends for the military services), any effect of basic training on personality development has substantial implications for society.

Little is known about the impact of basic training on personality. Instructors and others associated with basic training believe that most young people benefit substantially from this experience. The training may help them become more organized, self-controlled, better able to cope with stressful demands, and generally to have higher self-esteem.

The one published study of personality change in the general military recruit population during basic training contrasts sharply with the positive subjective impressions of people familiar with military basic training. Ekman, Friesen, and Lutzker (1962) found that recruits tested later in basic training scored higher on Minnesota Multiphasic Personality Inventory (MMPI) scales than recruits tested earlier in training. differences were larger when recruits in the eighth week of training were compared to recruits in the first week than when the comparison was between fourth week and first week. The precise magnitude of effects was not reported, but a figure describing the mean differences suggested that eighth-week recruits were comparable to first-week recruits on some scales (D, Hy), but had T scores 5 or more points higher on others (Hs, Pd, Pa, Pt, Sc, Ma). Ekman et al. (1962) interpreted the profile differences as ". . . suggesting that aggressive, impulsive, and energetic features became slightly more prominent . . . " and that changes included slight increases in callous attitudes, ignoring the needs of others, and feeling selfimportant. This overall protocol would suggest a shift toward antisocial behavior patterns.

The group comparisons failed to identify any counterbalancing positive effects. Ekman et al. (1962, p. 103) included ego strength in the scales evaluated and concluded that "There was no increase in scores on ego strength, or any other evidence of beneficial psychological effects accruing from basic training." The net effect of basic training, therefore, appeared to be negative. This conclusion was qualified by the observation that subjects may simply have been more willing to admit mild forms of antisocial behavior after training than before. This possibility was suggested by lower K-scale scores at the end of training.

The only available evidence to refute Ekman et al. (1962) appears to

be a study by Hoiberg (1978). Her study addressed personality change in Marine Corps recruits participating in a physical conditioning platoon. Recruits who completed the conditioning program demonstrated substantial increases on Comrey's (1970) Trust, Orderliness, Social Confirmity, Activity, Emotional Stability, Extraversion, and Masculinity scales. The significance of these findings for recruits in general is uncertain because the recruits assigned to the physical conditioning platoon had exceptionally poor fitness and/or were overweight on entry into the program. The program itself was not part of the standard basic training program, so both the intensive training and the fact that the program participants were the focus of specialized, relatively personal attention may have affected the findings.

While there presently is no direct evidence of positive personality changes occurring during basic training in the general recruit population, any inference that basic training produces personality changes with negative social implications would be premature at this time for several reasons. One reason is that Ekman et al.'s (1962) results have not been replicated. A second reason is that the MMPI may provide an incomplete picture of the personality effects of basic training. Current personality measurement models suggest that at least five major domains must be evaluated to provide a reasonably complete personality profile (Digman, 1990; Goldberg, 1993; John, 1990). The MMPI samples heavily from one domain, neuroticism, with a weaker representation of the remaining domains. Further, MMPI scales were not constructed to separate the domains clearly even if the item content does cover them all. Effects in distinct domains could not be isolated even if they were produced by basic training. Hoiberg's (1978) results may generalize to the overall recruit population when scales designed to measure the full range of normal personality characteristics are employed to assess the impact of basic training on personality.

The present study extended Ekman et al.'s (1962) initial inquiries. The NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992) was used to assess personality. This instrument covers all five major personality domains. Changes in personality are examined directly in one recruit sample using a within-subject design. The pattern of changes then is replicated in a between-groups comparison in which one group was assessed early in basic training and the other later in training.

# Method

# Sample

The study employed two recruit samples. One sample consisted of 40 recruits who agreed to participate in a study of the effects of stress on memory. These recruits completed the personality measures approximately one week into training and again six weeks later. This group comprised the repeated-measures sample.

The second sample consisted of 217 recruits who agreed to participate in a study of the effects of stress on cognitive performance. Again, the personality inventory was included as a potential predictor of differences in performance under stress. One group (n = 131) completed the NEO-FFI approximately 1 week into basic training. The second group (n = 86) completed the test approximately 6 weeks later. These two groups comprised

the between-groups sample.

The three groups had comparable demographics (Table 1), except for age ( $F_{2,250} = 20.08$ , p < .001). The remaining differences in demographics were statistically nonsignificant despite what may appear to be substantial differences in ethnicity, for example.

Table 1
Demographic Characteristics of the Recruit Groups

|                             | Sample 1<br>Between-groups |             | Sample 2<br>Repeated measures |  |
|-----------------------------|----------------------------|-------------|-------------------------------|--|
|                             |                            |             |                               |  |
| _                           | Early                      | <u>Late</u> | Sample                        |  |
| Age (in years) <sup>a</sup> | 20.4                       | 21.6        | 19.2                          |  |
|                             | (1.7)                      | (2.9)       | (1.2)                         |  |
| Education (in years)        | 12.3                       | 12.5        | 12.4                          |  |
| _                           | (0.7)                      | (1.1)       | (0.9)                         |  |
| AFQT <sup>b</sup>           | 63.2                       | 63.4        | 62.3                          |  |
| •                           | (17.4)                     | (17.4)      | (18.9)                        |  |
| Proportion with:            |                            |             |                               |  |
| High School Diploma         | 93.8%                      | 89.4%       | 97.5%                         |  |
| Single Marital Status       | 93.8%                      | 89.5%       | 92.5%                         |  |
| Caucasian Ethnicity         | 77.1%                      | 72.9%       | 87.2%                         |  |
|                             |                            |             |                               |  |

<sup>&</sup>lt;sup>a</sup>Standard deviations are listed in parenthesis.

Post hoc comparisons were made for age. The modified least significant difference test (SPSS, Inc., 1990) indicated that:

Late Between Groups > Early Between Groups > Repeated Measures.

The age difference for the subsamples in the between-groups study should be kept in mind, because normal developmental trends would be expected to produce at least some difference between these groups given the personality measures being examined (Costa & McCrae, 1992).

# Personality Inventory

The NEO-FFI is a 60-item personality questionnaire. A 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" provides the response options for the items. Items are scored as five 12-item scales. Costa and McCrae (1992) describe these scales as assessing the following general types of differences:

Neuroticism. Extreme scores on this scale contrast emotionally stable individuals who are not troubled by stress and stress-sensitive individuals who experience high levels of negative emotions. The high scorer is prone to experience negative affects such as anger, guilt, fear, and sadness and to have problems adapting to stressful situations. The low scorer is calm, even-tempered, and not likely to be bothered by stress.

Armed Forces Qualifying Test. This test is an indicator of general mental ability, 'g' (Ackerman, 1988).

Extraversion. Extreme scores on this scale contrast individuals who like or need the company of other people and experience periods of strong positive emotions with people who prefer to be alone and who are unlikely to experience emotional highs. The high scorer is sociable and gregarious with a liking for large group settings. The high scorer also is assertive, optimistic, and generally happy and cheerful with some periods of extreme positive emotions. The low scorer prefers spending time alone and is reserved and independent when with others. The low scorer is not especially prone to negative emotions, but does not experience the positive emotional highs of the high scorer.

Openness. Extreme scores contrast people who seek and deeply immerse themselves in new experiences and ideas with people who prefer conventional wisdom, tradition, and repetition of previously enjoyed experiences. The high scorer is curious, willing to explore novel behaviors and ideas, and sensitive to aesthetic experiences and the emotional highs and lows of life. The low scorer is conventional, has a conservative outlook on life in general, and prefers familiar places and things over novel experiences.

Agreeableness. Extreme scores on this scale contrast people who are trusting, considerate and sympathetic with people who are cynical, rude, and arrogant. The high scorer is sympathetic and helpful to others, cooperative, and modest about himself or herself. The low scorer is cynical, antagonistic, skeptical about other people's intentions, and more likely to compete than cooperate.

Conscientiousness. Extreme scores on this scale contrast people who strive for high levels of achievement by highly orderly, organized methods with people who may have difficulty remaining focused on a goal and/or taking systematic steps to achieve their goals. The high scorer sets high standards and persists in attempting to achieve them even when it is difficult to do so. The high scorer also is organized and methodical. The low scorer is unreliable and tends to be disorganized in pursuit of goals.

# Statistical Analysis

A t test for correlated means evaluated the statistical significance of differences in personality in the repeated-measures sample. Standard t tests evaluated differences in the between-groups sample. The SPSS statistical program (SPSS, Inc., 1992) was used to perform the computations. Differences in personality translated into effect sizes (ES) to facilitate comparisons between the between-groups and within-groups results. ES for each personality variable was computed as follows:

# ES = (Late Training Average - Early Training Average) Early Training Standard Deviation

ES computations were the same for the repeated-measures and between-group elements of the study. This approach provides appropriate ES estimates for both types of design (Dunlap, Cortina, Vaslow & Burke, 1996).

The method of adding probabilities (Rosenthal, 1978) was employed to estimate the significance of trends combining the two samples. One-tailed significance tests were used on the assumption that basic training

generally would have effects that corresponded to Ekman et al.'s (1962) findings for neuroticism and to the trends toward higher extraversion, openness, conscientiousness, and agreeableness that are part of normal maturation processes in this age range.

#### Results

Neuroticism and Conscientiousness scores were affected by basic training (Table 2). Neuroticism was significantly (pooled p < .001) lower later in training in both samples. The ES was comparable in the two samples (Repeated measures, ES = -0.24; Between groups, ES = -0.29). Conscientiousness was significantly (pooled p < .0001) higher later in training. The ES was 0.36 for both samples.

Extraversion, Openness, and Agreeableness were not affected by basic training. These domains produced consistent trends, but the ESs consistently were below Cohen's (1983) lower bound for small effect sizes (i.e., ES = 0.20). None of these domains produced a statistically significant difference in either sample alone (p > .065) or when the samples were combined (p > .128).

Table 2
Personality Differences From Early to Late Basic Training

|                   | N           | E     | Q     | A     | C     |
|-------------------|-------------|-------|-------|-------|-------|
| Repeated measures | <del></del> | _     |       | _     | -     |
| Early             |             |       |       |       |       |
| Mean              | 20.05       | 32.88 | 29.17 | 31.45 | 33.93 |
| SD                | 8.21        | 6.06  | 5.12  | 6.26  | 5.52  |
| Late              |             |       |       |       |       |
| Mean              | 18.05       | 33.33 | 30.05 | 30.60 | 35.90 |
| SD                | 7.28        | 5.93  | 5.66  | 5.39  | 5.58  |
| Difference        |             |       |       |       |       |
| ES                | 24          | .07   | .17   | 14    | .36   |
| Sig.              | .007        | .255  | .066  | .101  | .001  |
| Between groups    |             |       |       |       |       |
| Early             | 00 50       | 21.06 |       |       |       |
| Mean              | 20.53       | 31.26 | 28.02 | 30.95 | 32.83 |
| SD                | 8.13        | 6.21  | 5.99  | 5.73  | 6.89  |
| Late              | 40.04       |       |       |       |       |
| Mean              | 18.21       | 31.83 | 28.67 | 30.71 | 35.33 |
| SD                | 6.40        | 6.18  | 6.26  | 6.44  | 6.61  |
| Difference        |             |       |       |       |       |
| ES                | 29          | .09   | .11   | 04    | .36   |
| Sig.              | .026        | .511  | .442  | .777  | .009  |
| Pooled Sig.       | .001        | .294  | .129  | .386  | .0001 |

# Discussion

Basic training changes personality in a positive direction. The current findings directly contradict Ekman et al.'s (1962) results indicating negative effects of basic training on personality with no positive effects. Recent meta-analytic reviews have linked low neuroticism and high conscientiousness to a variety of performance indicators (Barrick & Mount, 1991; Kamp & Hough, 1986; Tett, Jackson, Rothstein & Reddon, 1994). From an organizational perspective, the decrease in neuroticism and increase in conscientiousness occurring during basic training imply that recruits are being prepared to be more effective members of the military service.

The inference that basic training causes changes in personality is a strong claim given that the present study did not involve a true experimental design. The claim is defensible because several important alternative interpretations can be eliminated from consideration. If this study had been limited to the between-groups design, higher attrition during basic training selectively eliminated people with high neuroticism scores and low conscientiousness scores. This argument cannot explain the results of the repeated-measures sample where there was no attrition. If only the repeated-measures design had been used, it might be argued that filling out the questionnaires twice changed self-descriptions. This argument cannot explain the between-groups effects estimated from data provided by participants who completed the questionnaire only once. General factors such as response style could be invoked to explain the results. Explanations based on such general mechanisms are questionable when only some of the variables are affected.

Normal developmental processes might be invoked to explain the results. The group tested later in training was older than the group tested earlier in training in the between-groups study. Similarly, the recruits in the within-group study obviously were older when tested the second time than when tested the first time. This interpretation is questionable in light of the size of the observed changes. personality score distributions have roughly the same means and standard deviations for different age groups over the age of 30 (McCrae & Costa, . 1990), people in their late teens and early twenties produce distributions which consistently differ from those observed in adulthood. One example of the differences is found by comparing the NEO-FFI norms for college-age students and adults (Costa & McCrae, 1992). College-age individuals are approximately the same age as military recruits. Using the differences between college-age norms and adult norms, normal developmental processes yield an ES of 0.62 for N and 0.54 for C between college and adulthood. If basic training was an average two-month period in this approximately 10year interval (i.e., college-age to 30 years of age), the expected changes in personality during basic training would be approximately 1/60th of this total difference between college-age and adult norms. The expected ES thus would be about -0.010 and 0.009 for N and C, respectively. The unweighted averages of the observed ESs were -0.27 and 0.36, respectively. Basic training produced changes on the order of 30 to 40 times the rate of average normative development. Expressed another way, if the changes in personality that take place in basic training become a lasting aspect of personality for these recruits, basic training would account for 44% of the expected normative development in N from late adolescence to adulthood. The corresponding figure for C would be 67%.

The comparison of expected normative change and observed change suggests that personality growth may not be a slow, steady process. estimated rate of change for a two-month period used in the previous computations assumes a constant growth rate over a 10-year period. changes observed in basic training substantially exceed what is expected given this model. The magnitude of the observed changes may appear improbable given the brief duration of basic training, but it is conceivable that personality growth is saltatory. Substantial changes may occur rapidly, then be followed by relative quiescence until the next sharp change. Entry into new social settings with new opportunities and new behavioral demands may trigger periods of substantial growth. explanation could account for the relatively large changes in personality during basic training and would bolster the view that basic training causes personality change. If basic training is not a causal factor, the large changes in personality during basic training would require that entry into basic training coincide with the onset of some other causal factor that produced significant personality change in a substantial proportion of recruits. Such coincidence is possible, but unlikely.

The assumption that basic training changes personality also is supported by the fact that the observed changes in personality are plausible consequences of events in basic training. Recruits have survived what is acknowledged to be a stressful situation. An increased faith in one's ability to handle stress is a logical consequence of this success. Stress vulnerability is one element of neuroticism, so successful mastery of the stresses of basic training could plausibly change at least one element of neuroticism. Similarly, basic training requires that recruits strive for achievement and recruits can receive demerits and other punishments for failure to be orderly and organized enough to be ready for inspections and tests. Recruits may decelop higher levels of personal organization and higher achievement standards in response to these situation demands.

At present, these process-oriented explanations of the observed personality changes should be viewed cautiously because they are post hoc. The present findings can serve as a broad survey of personality change that establishes a starting point for developing specific, focused hypotheses about which elements and events in basic training alter the character of recruits. While current training practices yield graduates who are better prepared to be productive service members than they were when they entered the service, a better understanding of processes underlying those changes could refine the process to ensure even greater effects on character. The present results provide bases for developing and testing hypotheses to understand the change processes.

The direct contradiction between the present findings and Ekman et al.'s (1962) findings could be explained many ways. The two studies involved different basic training programs (Army versus Navy), recruit populations from different eras (recruits born shortly after World War II versus recruits born during the Viet Nam era), and different assessment instruments measuring different aspects of personality (psychopathology symptoms versus normal personality). Furthermore, basic training processes and procedures have changed in the 30 years between the two studies. The goals and structure of training remain much the same, but the training techniques used to achieve the goals are less authoritarian with stricter limitations on the types and amount of punishment that can be given for mistakes. While none of these explanations has actually been shown to

account for the differences in the two studies, the range of possibilities makes it clear that the conflicting results could be resolved in one or several different ways. Overall, refutation of Ekman et al.'s (1962) conclusions is less important than the replicated demonstration of positive effects of basic training on personality under recent training conditions.

The present findings echo Hoiberg's (1978) results obtained in a select subgroup of recruits who went through special physical conditioning training. This parallel suggests that present findings may generalize across time and to special subgroups within the training population. No matter what the precise relationship to past observations may be, the key finding in this study was that the training program as currently structured produces graduates who are better prepared psychologically to be effective service members than they were when they entered basic training.

The findings of this study have important implications for military effectiveness. The core finding that basic training produces changes in character that prepare recruits to be more effective service members could set the stage for detailed investigation of basic training processes. Those detailed studies would seek to isolate and reinforce the elements of basic training that foster character development. An improved understanding of the processes underlying normal personality development between late adolescence and adulthood could be one valuable side effect of studying these issues. This understanding would help test and refine theories of personality development and would have applications to social delinquency problems associated with character flaws. Basic training, therefore, can be a crucible for character formation and a natural laboratory for understanding character development during an important maturation period.

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Military basic training is a stressful situation that may influence the personality development of military recruits. Training personnel perceive substantial positive changes in recruits, but the limited empirical evidence suggests that training increases mild symptoms of psychopathology. This study used a combination of between-groups and within-subjects research designs to demonstrate that neuroticism decreased and conscientiousness increased during basic training. Extraversion, openness, and agreeableness were not affected by basic training. These findings support the view of training personnel that basic training fosters positive changes. Combined with the results of recent metanalyses of personality and job performance, the results indicate that basic training graduates are better prepared psychologically to be effective service members than they were when they entered the service.

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